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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,482	01/15/2004	W. Clark Dean	67010-054	6179
26096	7590	09/20/2005	EXAMINER	
CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			HANAN, DEVIN J	
			ART UNIT	PAPER NUMBER
			3745	

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Taka

Office Action Summary	Application No.	Applicant(s)	
	10/758,482	DEAN, W. CLARK	
	Examiner	Art Unit	
	Devin Hanan	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-15 and 19-24 is/are allowed.
- 6) ☒ Claim(s) 1-3 and 16-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1/15/04 and 6/7/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Niedermeier et al. (U.S. Patent 5,069,560).

Niedermeier discloses a rotating shaft seal assembly with a shaft supported for rotation within a housing (the inner race, 4, is inherently mounted on a shaft)

a traction drive rotating a seal ring about said shaft at a speed different than said shaft (*The inner race, 4, is mounted to the shaft and therefore spins at that speed. The outer race is mounted to the housing and does not rotate. The traction ball is in contact with both races, making the ball rotate at a speed less than the inner race, but greater than the stationary outer race. The cage seal, 3, rotates at the same speed as the ball because the ball cannot move without moving the cage seal*), wherein the traction drive includes a traction ball (2) supported by said seal ring (3) and driven by the traction drive and

a plurality of seal elements (7 on both sides of the ball) supported by the seal ring.

Regarding claim 2, Niedermeier discloses all of the claimed element in claim 1 and the inner traction ring (4) inherently rotating with the shaft, the outer traction ring (1)

inherently fixed to the housing, and the traction ball (2) supported by the seal ring (3) and driven by the inner traction ring.

Regarding claim 3, Niedermeier discloses the traction rings have traction grooves and the traction ball is supported in the grooves (traction ball 2 rests in a groove).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ray et al. (U.S. Patent 6,036,434) in view of Niedermeier et al. (U.S. Patent 5,069,560).

Ray et al. discloses a shaft (40) supported for rotation within a housing (12)

a rotor driven by the shaft within a compressor chamber (32), the rotor including a compression vane (35) and a vane extension (60) extending from a rear portion of the compression vane

a traction drive (figure 1, bearing located on left side of shaft 40) supported about said shaft and rotating at a speed different than said shaft, and

Ray et al. does not teach of a seal ring supporting a plurality of seal elements driven about said shaft by said traction drive.

However, Niedermeier et al. teaches of a seal ring (3) supporting a plurality of seal elements (7 on each side of the ball 2) driven about said shaft by said traction drive.

Since Ray et al. and Niedermeier et al. both involve bearings; the purpose disclosed by Niedermeier et al. would have been recognized in the pertinent art of Ray et al. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the grooves and the cage seal of Niedermeier et al. into the bearing of the centrifugal pump of Ray et al. in order to increase the sealing action at the location of the bearing.

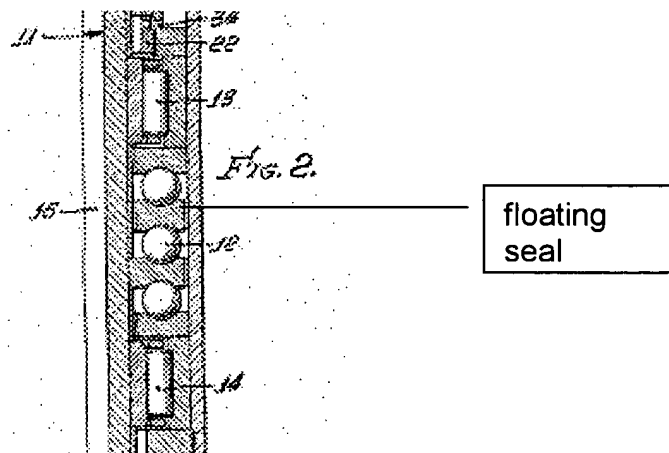
Regarding claim 17, Ray et al. in view of Niedermeier et al. discloses all of the above claimed elements and teach of vane extensions (60) capable of producing a centrifugal field between the housing and the rear portion of said compression vane, the centrifugal field between the housing (86d) and the rear portion of the compression vane (36) to reduce pressure of gas traveling toward the shaft.

Allowable Subject Matter

Claims 4-15 and 19-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior Art

The patent to Robinson (U.S. Patent 2,907,611) was cited for its teachings of ball bearings 12 adjacent to parts that are stationary, rotating at the shaft speed and floating between two bearings. The part rotating between two bearing acts a moving seal supported by bearings. The seal would rotate at a speed less than the shaft speed, but would not be stationary.



The patent to Tadic et al. (U.S. Patent 6,332,718) was cited for its teachings of a bearing with a ball (11) and seals capable of rotating (16).

The patent to Hussblein et al. (U.S. Patent 5,102,242) was cited for its teachings of a bearing with a ball (11) and seals that support the ball (abstract).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devin Hanan whose telephone number is 571-272-6089. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on 571-272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.
For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should
you have questions on access to the Private PAIR system, contact the Electronic
Business Center (EBC) at 866-217-9197 (toll-free).



Devin Hanan
Patent Examiner
Art Unit 3745



EDWARD K. LOOK
SUPERVISORY PATENT EXAMINER
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9/19/05